

TITLE OF INVENTION

Multi-Compartment Semi-Trailer For Transport of Recyclable Materials

CROSS REFERENCE TO RELATED APPLICATIONS

5 [0001] This application is a continuation-in-part application of Application No. 10/737,564, filed December 16, 2003.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR  
DEVELOPMENT

10 [0002] Not Applicable

BACKGROUND OF THE INVENTION

1. Field of Invention

15 [0003] This invention pertains to transport vehicles for moving recyclable materials long distances. More particularly, this invention pertains to a semi-trailer for contained transport of salvageable vehicles and bulky recyclable materials.

2. Description of the Related Art

20 [0004] As prices for recyclable salvage materials escalate, salvage materials are being transported over significantly greater distances on public roads. Prior transport vehicles include flat-bed trucks and semi-trailers lacking walls on which crushed vehicle bodies and other bulky recyclable materials are stacked and secured by chains and cables. Due to the increasing frequency of mishaps involving damage to public vehicles by ejection of debris from flat-bed trucks and semi-trailers lacking side walls, the U.S. Department of Transportation has developed regulations requiring transport of salvageable vehicles to be contained

by a transport vehicle having side walls when moved on public roads.

**[0005]** Prior methods of transport of refuse and recyclable materials over short distances in local communities include trucks having individual hoppers accessible from a perimeter of the vehicle, or dump trucks having an open bay in which materials were dumped by auxiliary equipment (see U.S. Patent 6,309,164).

5 For long distance transport of refuse and recyclable materials, dump trucks have typically been utilized with no covering over the materials. The above described vehicles are typically not adequately sized to accept crushed vehicles or other bulky recyclable materials that are efficiently loaded and unloaded utilizing a forklift system and/or an overhead crane system. Flat-bed rail cars have been utilized for transport of refuse and recyclable materials contained in boxes mounted on the flat-bed rail cars, or flat-bed rail cars have been utilized to transport crushed vehicles stacked and secured by chains or straps thereon.

10 Typical rail cars utilized for hauling refuse have included cars having four side walls and an enclosing top wall, with one or opposed side doors being slid sideways to provide a side opening for loading and unloading of refuse. For typical rail cars which utilize a side door rigidly attached to a covering top wall, when the side door and top wall are opened, the side door is limited in movement therefore obstruction of the side door opening occurs (see U.S. Patent No. 5,488,911).

15 Further, an enclosing top wall for a rail car does not allow overhead access for loading and unloading of the rail car contents from overhead by a crane.

**[0006]** An improved transport vehicle is needed to meet federal regulations for containment of salvageable vehicles and other bulky recyclable materials during towed transport. Further, an improved semi-trailer transport vehicle is

needed to provide compartments for containment of salvageable vehicles  
segregated from other recyclable materials during towed transport of the semi-  
trailer while offering efficient loading and unloading of salvageable vehicles and  
other recyclable materials due to unobstructed side access or unobstructed  
5 overhead access with a minimum of movement of sidewalls. In addition, a semi-  
trailer is needed having reduced trailer weight while maintaining trailer platform  
rigidity in order to increase carrying capacity for salvageable materials stored in  
compartments on the semi-trailer.

#### BRIEF SUMMARY OF THE INVENTION

10 [0007] According to one embodiment of the present invention, a semi-trailer  
is provided for transporting salvageable materials to one or more processing  
facilities. The semi-trailer includes a platform having multiple compartments  
thereon and supported by a wheeled undercarriage for towed transport. The  
platform includes a first sidewall extended along a first side and a second sidewall  
15 extended along a second side of said platform, with each sidewall having upper  
portions extended upwardly to bound an open top of sufficient width separation to  
receive salvageable materials therein. Front and rear end walls are extended  
between the first and second sidewalls, and a partition wall is spaced apart  
between the front and rear end walls, with the partition wall being oriented for  
separation of the platform into a forward compartment and a rearward  
20 compartment.

[0008] The second sidewall is mounted for clamshell movement between a  
closed position aligned along the second side of the platform and substantially  
parallel with the first sidewall, to a raised position above the platform. The second

sidewall includes front and rear upper support segments extended laterally across the platform width. Each front and rear upper support segment is disposed laterally adjacent with respective front and rear end walls. Each support segment includes respective front and rear connecting ends pivotably mounted to respective front and rear upper portions of the first sidewall. The second sidewall also includes a middle upper support segment extended laterally from a middle of the second sidewall and is positioned adjacent the partition wall on the platform.

5 [0009] A lifting mechanism is utilized for movement of the second sidewall from the closed position to a raised position above the platform. Movement to the raised position provides unobstructed side access to either of the forward and 10 rearward compartments for loading and unloading of salvageable materials. Movement to the closed position provides for containment and segregation of salvageable materials during towed transport to processing facilities.

15 [0010] With the second sidewall positioned in the closed position, the separation between each first and second sidewall provides each compartment with an open top of sufficient width and length to receive salvageable materials in either compartment from an overhead delivery mechanism. In order to reduce the unloaded weight of the semi-trailer and thereby increase the load capacity for 20 transport of salvageable materials during each trip, the first sidewall, the front and rear end walls, and the second sidewall include light-weight materials extending between upper and lower frame members and having a plurality of spaced-apart studs extending upwardly relative to the platform when the second sidewall is in the closed position. The first sidewall, the front and rear end walls, and the second sidewall further include generally continuous exterior surfaces which are

composed of a mesh material supported by the plurality of spaced-apart studs, with the mesh material allowing air flow therethrough during transport and providing a lesser unloaded weight for the platform in comparison to solid metal sidewalls and end walls. Loose salvageable materials generated during loading or transport are retained within the respective compartments regardless of air flow through the compartments during towed transport thereby protecting other vehicles traveling near the platform during towed transport over public roads.

#### BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

**[0011]** The above-mentioned features of the invention will become more clearly understood from the following detailed description of the invention read together with the drawings in which:

Figure 1 is a perspective view of a semi-trailer of the present invention having multiple compartments in which salvageable materials are segregated;

Figure 2 is a perspective view of Figure 1, illustrating the movable sidewall in a raised position for side loading into either compartment of the semi-trailer;

Figure 3A is a rear view of Figure 1, illustrating the movable sidewall in a closed position with a rear lifting mechanism disposed in a non-extended position;

Figure 3B is a rear view of Figure 3A, illustrating the movable sidewall in the elevated position with the rear lifting mechanism in an extended position;

Figure 4 is an exploded view of an upper corner pivot connection of Figure 3B, illustrating an upper rear support segment providing for reciprocating movement of the second sidewall;

Figure 5 is an exploded view of an upper rear connection joint of Figure 3B, illustrating an extendable piston attachable to a mid-portion of the rear support

segment of the second sidewall;

Figure 6A is a cut-away view of a middle lifting mechanism enclosed within a middle partition wall and with the second sidewall in the closed position;

Figure 6B is an exploded view of an upper connection joint and a middle piston extended to an elevated position; and

Figure 7 is a side view of Figure 2 with the second sidewall in the raised position, illustrating the middle partition wall having a lifting mechanism therein.

#### DETAILED DESCRIPTION OF THE INVENTION

**[0012]** In accordance with the present invention, a semi-trailer **100** having multiple storage compartments **110, 110'** is provided for contained transport of salvageable materials such as crushed vehicles **192, 192', 192"** and other bulk recyclable materials **194** to processing facilities. Unobstructed side access is provided to the storage compartments **110, 110'** by mounting a pivotable second sidewall **134** for clamshell movement between a closed position **140'** and a raised position **140** above the platform **116**. With the pivotable sidewall **134** in the closed position, the semi-trailer **100** is towed by connection to a tractor-truck sized to provide adequate towing capacity of up to about a twenty ton load capacity for the platform **116** mounted on a multi-wheeled undercarriage **112** (see Figs. 1 and 2). The platform **116** includes an adequate width between a first side **116'** from a second side **116"** for positioning thereon a plurality of crushed vehicles **192, 192', 192"**, either through an open top **136'** with the pivotable sidewall **134** closed, or by side access along the second side **116"** with the pivotable sidewall **134** raised (see Figs. 1 and 2).

**[0013]** In order to retain size-reduced recyclable materials on or in a semi-

trailer **100** during transport over public roads, a fixed first sidewall **130** forms a first containment wall extending vertically along the length of the platform first side **116'** from a front end **118** to a rear end **120** (see Figs. 2 and 3A). The first sidewall **130** is extended for a height above the platform **116** of between about 8 feet 6 inches, for a total height above the ground of about 13 feet 6 inches in one embodiment. The height of the first sidewall **130** is constructed to be an adequate height above the platform **116** to retain the flattened profiles of each upper-most stacked crushed vehicle **192**, **192'** or **192"**, at a height of approximately equal to, or lower than, the height of a lengthwise oriented upper frame **132** of the first sidewall **130**. The platform **116** further includes a fixed front end wall **122** and a fixed rear end wall **124** aligned generally parallel with each other and spaced apart a sufficient length to accommodate therebetween a plurality of recyclable materials in various shapes. An end-to-end platform length extending between end walls **122**, **124** is about forty feet to about forty-one feet. The front end wall **122** and rear end wall **124** are joined along respective base portions to the platform **116**. Rigid corner studs are required to support the pivoting ends of the second sidewall **134**, including a wall front corner member **122"** and a rear corner member **124"** positioned at respective front and rear corners of a lower frame **132'** of the first sidewall **130**. The upper frame edges **122"**, **124"** of the mid-portion of respective front and rear end wall support studs **122**, **122"**, **124**, **124'** are angled downwards toward the platform second side **116"**, thereby providing a lower height threshold for lifting salvageable materials over either front or rear end wall support studs **122**, **122"**, **124**, **124'** when loading or unloading across the platform second side **116"** by a forklift **190** (see Fig. 2) or other lifting and loading device. The first

5 sidewall **130** and substantially upright wall support studs **122, 122", 122""**, **124, 124', 124""** are positioned as a plurality of steel or aluminum support members **130", 130""** spaced apart along each sidewall and platform ends, to provide rigid containment walls for recyclable materials stacked on the platform **116**. Two open tops **136', 136"** are provided to allow a plurality of crushed vehicles **192, 192', 192"** and/or other recyclable materials **194** to be loaded or unloaded into either or both storage compartments **110, 110'** from overhead by appropriate equipment positioned proximal of the platform **116** with the second sidewall **134** in a closed position **140'**.

10 [0014] During towed transport of the semi-trailer **100**, the pivotable second sidewall **134** is positioned in a closed position **140'** in which a base frame member **138** is disposed adjacent the length of the platform second side **116"**, and the second sidewall **134** is extended substantially parallel to the first sidewall **130** (see Figs 1 and 3A). The second sidewall **134** is pivotably disposed to a raised position **140** above the platform **116** (see Figs. 2, 3B, 6B and 7), by at least one lifting mechanism **150** powered in one embodiment by a hydraulic power system including one rear motor **160** and/or a front motor **160'** which are controlled by an operator when the semi-trailer **100** is stationary. One skilled in the art will recognize that the lifting mechanism **150** can include a hydraulic system that is pressurized by power generated by the engine of a tractor-truck, or the lifting mechanism **150** can include a pneumatic air system that is supplied by a pressurized system utilized by a tractor-truck designed to pull a semi-trailer.

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20 [0015] The second sidewall **134** includes an upper frame **136** extended between an upper corner of an upper front support segment **142** and an upper

corner of an upper rear support segment **144**. When in the closed position **140'**,  
the upper front support segment **142** has a pivot connector end **142'** extended  
adjacently parallel above the front end wall **122**, and the upper rear support  
segment **144** has a pivot connector end **144'** extended adjacently parallel above  
5 the rear end wall **124**. Both connector ends **142', 144'** are configured to extend  
laterally about eight feet to traverse the platform width and to connect pivotably at  
respective front and rear pivot junctions **126', 128'** proximal of the upper front  
and rear corners of the first sidewall **130**. When in the raised position **140**, the  
movable front support segment **142** is raised into a cantilevered position above the  
10 front end wall **122**, and the movable rear support segment **144** is raised into a  
cantilevered position above the rear end wall **124**, thereby providing unobstructed  
access for loading and unloading of either the front and rear storage  
compartments **110, 110'**.

15 [0016] In order to reduce the unloaded weight of the semi-trailer **100**  
thereby increasing the capacity for recyclable materials, the outer surfaces **196** of  
the first sidewall **130**, the pivoting sidewall **134**, and the front and rear wall  
segments **122, 142, 124, 144**, can be composed of a mesh or lattice material  
allowing air flow therethrough. By utilizing a mesh or lattice material covering the  
first sidewall, the front and rear end walls, and the pivoting sidewall **134**, the  
20 gross weight of the semi-trailer **100** is reduced by approximately 5,000 pounds,  
while retaining structural integrity of the side walls by utilizing a plurality of  
spaced-apart studs **130"**, **130""** to support the mesh or lattice materials. Typical  
materials utilized for the outer surfaces **196** include a fabric tarp, a high-density  
plastic mesh, or a lattice material composed of steel, aluminum or synthetic

polymer materials. The outer surfaces **196** of the mesh or lattice materials are supported by a plurality of spaced-apart studs **130"**, **130""** positioned between the major sidewall structural support members of the semi-trailer **100** including corner support members **122"**, **124"**, **126**, **128**, and cross-member supports **142'**, **144'**, **174'** (discussed herein). A sidewall support member at the front corner **126** and back corner **128** of the first sidewall **130**, and at the front corner member **134'** and rear corner member **134"** of the second sidewall **134** (see Figs. 1 and 7), are preferably composed of rigid materials such as steel, aluminum, or similar structural materials to provide adequate support for the outer surfaces **196** extended therebetween, and to support second sidewall **134** during movement. The sidewalls **130**, **134** can include horizontal cross-members **130"**, **138"** extended between respective studs **130"**, **130""** to increase sidewall rigidity.

[0017] A middle partition **170** is incorporated in the semi-trailer **100** for separation of the trailer storage area into at least two storage compartments **110**, **110'** on the platform **116**. By providing at least two storage compartments **110**, **110'**, the semi-trailer **100** can be utilized for segregation of a plurality of crushed cars **192**, **192'**, **192"** from other large recyclable materials **194** having a separate destination or requiring alternative recycling. The middle partition **170** is formed by a fixed partition wall **172** having a "u-shaped" cross-section when viewed from above, and having an interior cavity **178** opening outwardly and laterally toward the second, loading side **116"** of the platform **116**. The fixed partition wall **172** includes a base portion originating against the floor of the platform **116**, and at least one inspection door **170'** on a rearward side of the fixed partition wall **172**. The inspection door **170'** provides access into the interior cavity **178** from the rear

storage compartment **110'** to allow maintenance to a middle lifting cylinder **180** if utilized and positioned within the cavity **178** (see Figs. 6A and 6B).

**[0018]** Pivots laterally adjacent of the fixed partition wall **172** is a movable middle partition **174** having a triangular surface area forming a central body of the middle partition **174**. One embodiment provides the middle partition **174** in planar alignment above the fixed partition wall **172** when the second sidewall **134** is in the closed position **140'** (see Fig. 6A). The fixed partition wall **172** includes a first wall portion **172'** attached to the first wall upper frame member **132** and having an upper surface angled downwardly to the platform second side **116"** (see Fig. 6B). The fixed partition wall **172** further includes a second wall portion **172"** aligned adjacent with the first portion **172'** and also angled downwardly to the platform second side **116"**. When in the closed position **140'**, a leading edge **138'** of the base frame **138** portion of second sidewall **134** is positioned proximal to the lower sides of each first and second wall portion **172'**, **172"** (see Fig. 6A). When the movable middle partition **174** is raised into a cantilevered position above the fixed partition wall **172**, side access is provided to the cavity **178** housing a middle lifting cylinder **180**, if utilized. The fixed partition wall **172** and the movable middle partition **174** are preferably manufactured of steel or aluminum to provide a middle partition **170** contributing structural rigidity at about a mid-portion of the first sidewall **130** to support the movable middle partition **174** attached to second sidewall **134**.

**[0019]** In order to provide additional lifting support to the lifting mechanism **150** for lifting the pivotable second sidewall **134**, the movable middle partition **174** can be supported by an optional middle lifting cylinder **180** positioned in the

cavity **178** (see Figs. 6A and 6B). The middle lifting cylinder **180** includes a  
5 pivotable base **180'**, a piston rod **182** extendable from the lifting cylinder **180**, an  
upper bracket **184** connected to a mid-portion of the movable middle partition  
**174**, a connector pin **186** for attaching the bracket **184** to piston rod **182**. In  
addition, sufficient linkages such as hydraulic hoses or pneumatic conduits **188**  
10 are provided to supply power, whether hydraulic fluid or pneumatic pressure, from  
the lifting cylinder **180** to a power supply (see Fig. 6B). The upper bracket **184**  
connects to the pivotable middle partition **174** which extends to a pivot end **174"**  
releasably connected to a pivot junction **176** formed with the upper corners of the  
fixed partition wall first and second portions **172', 172"**. Pivot end **174"** is  
15 inserted in a tongue and groove configuration in junction **176** for movement of  
middle partition **174** relative to the fixed partition wall **172** when an operator  
actuates the lifting mechanism.

**[0020]** The upper frame **132** of the first sidewall **130** and the upper frame  
15 **136** of the second sidewall **134** provide a boundary for an open top **136'** allowing  
top loading access to a significant interior volume of contained space. The two or  
more compartmental areas **110, 110'** provided by the semi-trailer **100** is bounded  
by the length of the first sidewall **130**, the front end wall **122** having the upper  
front support segment **142** aligned thereon, the rear end wall **124** having the  
20 upper rear support segment **144** aligned thereon, and the second sidewall **134**  
when disposed in the closed position **140'**. The interior volume provided by the  
trailer **100** with the second sidewall **134** closed is in a range of between about  
2,798 cubic feet to about 3,250 cubic feet, depending on a height of the walls  
surrounding the platform **116** extended between the first sidewall **130** and the

second sidewall **134**. A preferred configuration of the first sidewall **130** and second sidewall **134** when in the closed orientation enclosing the platform **116** includes a height extending above the platform **116** of about 8 feet 6 inches high for the first sidewall **130** and second sidewall **134** in the closed position **140'**, with inside widths of about 8 feet wide for the front and rear end walls **122, 124**, and an inside length of about 41 feet 6 inches between the front and rear end walls **122, 124**.

[0021] The front pivot connector end **142'** of upper front support segment **142** is pivotably mounted by connection with at least one connector pin **142"** to an offset pivot junction **126'** proximal of the upper front corner **126** of the front end wall **122** in the same manner as illustrated in Figure 4. The rear pivot connector end **144"** of upper rear support member **144'** is pivotably mounted by connection with at least one connector pin **144""** to an offset pivot junction **128'** proximal of the upper rear corner **128** of the rear end wall **124** (see Figs. 1 and 4).

With the second sidewall **134** in the closed position **140'**, the upper front support member **142** is positioned adjacently above the front end wall **122**, and the upper rear support member **144** is positioned adjacently above the rear end wall **124**, with the combined height extending a sufficient height above the platform **116** to provide for enclosure of a plurality of stacked crushed vehicles **192, 192', 192"** up to a height of about eight feet, six inches above the platform **116**. When pivoted in a clamshell movement to the raised position **140**, the elevated second sidewall **134** provides an unobstructed length of the second side **116"** to allow rapid loading and stacking, and rapid unloading of crushed vehicles **192, 192', 192"** and other recyclable materials **194** on or off the platform **116**.

[0022] The upper front support segment **142** and upper rear support segment **144** are shaped to have a substantially triangular width when viewed from a forward or rearward position of the rear or front ends of the semi-trailer **100**. Each of the upper support member connector arms **142'**, **144'** and **174'** are generally rigid and include a reinforced central gusset member extended downwardly from each connector arms in a generally triangular shape. The central gusset member includes arcuate lower edges which align with and contact against an upper edge of respective front end wall **122** and rear end wall **124** when the second sidewall **134** is positioned in the closed position **140'**. An upper corner of the front support segment **142**, specifically the front pivot connector end **142'**, is pivotably attached proximal of the front upper corner **126** of the first sidewall **130** and the front end wall **122**. The front upper corner **126** is disposed at a height of between about eight feet to about eight feet and six inches above the platform **116**. The rear upper corner **128** is disposed at a height of between about eight feet to about eight feet and six inches above the platform **116**, and includes rear pivot connector arm **144'** as illustrated in Figures 3A and 3B. The second and lesser height of a second front end wall corner **126"** and a second rear end wall corner **128"** is between about a third or a half of the first height, providing end wall heights of between about four feet to about six feet above the platform **116**. The lesser height of the end wall corners **126"**, **128"** provide a lower threshold for lifting salvageable materials over either front or rear end wall proximal of the platform second side **116"** (see Fig. 2).

[0023] The lifting mechanism **150** provides for movement and positioning of the second sidewall **134** between closed **140'** and open, elevated **140** positions. A

preferred embodiment includes a pair of lifting systems positioned exterior of each front end wall **122** and rear end wall **124**. At least one rear lifting system **152** includes a cylinder body **154** having a piston arm **156** extendable therefrom, and includes a cylinder base **154'** pivotably mounted on the exterior surface of the rear end wall **124** at about a mid-portion of the base width of the rear end **120** of the platform **116** (see Figs. 3A and 3B). The rear lifting system **152** includes a piston arm **156** extended to a distal end **156'** that is pivotably connected utilizing a pin **156"** to an upper connection **146** fixed to the upper support member connector arm **144'** of the upper rear support segment **144** (see Figs. 3A, 3B and 5).

[0024] For one embodiment of the lifting mechanism **150**, at least one front lifting system **162** (see Fig. 7) is included having a cylinder body **164** from which a piston arm **166** is extendable, and having a cylinder base **164'** that is pivotably mounted on the exterior surface at about a mid-portion of the base width of the front end wall **122** in a configuration similar to that illustrated in Figures 3A, 3B and 5). The front lifting system **162** includes a piston arm **166** extended to a distal end **166'** that is releasably connected by pivot pin **166"** to a front mid-wall connection **148** fixed to an upper mid-portion of front upper support segment **142**. A second front cylinder and piston can be utilized (not shown) proximal of the first front hydraulic cylinder **164** and piston **166** for synchronous movement to the raised position **140** of the front upper support segment **142** of a heavily weighted upper frame **136** and second side wall **134**. The rear and front lifting systems **152, 162** are supplied with hydraulic power by hydraulic linkages providing pressurized hydraulic fluid transmitted by a plurality of hydraulic hoses **158, 168** in fluid connection with a hydraulic power system and at least one motor **160** of

approximately six horsepower power output and positioned proximal of the platform rear end **120**. An auxiliary motor **160'** can be positioned on the platform front end wall **122** (see Fig. 6). The plurality of hydraulic hoses **158, 168, 188** are detachably connectable to hydraulic linkages such as hydraulic hoses and conduits (not shown) that are extendable from a front portion of the semi-trailer **100** for detachably connecting to a tractor-truck hydraulic power system typically powered by the engine of a tractor-truck vehicle having an adequate power output to tow the semi-trailer **100** over significant distances.

**[0025]** A hydraulic power and motor control mechanism of conventional design (not shown) is provided such as hand-operated lever controls in communication with the respective lifting cylinders, in order to provide operator control of the hydraulic pressure supplied to respective rear, front and middle hydraulic cylinders **154, 164, 180** thereby controlling the synchronous raising of the second sidewall **134** from the closed position **140'** to the open position **140** above the platform **116**. A lock-out electrical or mechanical control mechanism is provided as part of the hydraulic power and motor control mechanism to negate the raising of the second sidewall **134** while the semi-trailer **100** is being moved, and to negate the lowering of the second sidewall **134** during loading and unloading of the platform **116**. Upon elevation of the second sidewall **134** to the open position **140**, a plurality of vehicles **192, 192', 192"**, and/or other recyclable materials are readily loaded and stacked on the platform **116** by a forklift **190** (see Fig. 2); or rolled and positioned onto the platform **116** from an adjacent loading ramp (not shown). When moved to the closed position **140'**, the second sidewall **134** contains the stacked vehicles **192, 192', 192"**, and/or other recyclable

materials for safe transport over roads in compliance with U.S. Department of Transportation regulations.

[0026] Rapid loading and stacking of salvageable vehicles onto the platform **116** is provided by a forklift **190** when the second sidewall **134** is elevated by the lifting mechanism **150** from the closed position **140'** to the open position **140** above the platform **116**. When a forklift **190** is not available for loading, a plurality of salvageable vehicles and/or compacted recyclable materials are readily lowered by an overhead crane (not shown) through either of the open tops **136'**, **136"** and into the contained space bounded by the first sidewall **130**, the front end wall **122** having the upper front support segment **142** above, the closed second sidewall **134**, and the rear end wall **124** having the upper rear support segment **144** above. An additional benefit of the semi-trailer **100** having the second sidewall **134** mounted for clamshell movement is the option of loading additional recyclable materials along with a plurality of crushed vehicles **192**, **192'**, **192"** from the platform second side **116"** when the sidewall is raised **140**.

Alternatively, If the trailer **100** is not filled to its preferred twenty ton load capacity, the second sidewall **134** can be positioned in the closed position **140'** and loading continued for any remaining unoccupied compartmental units **110**, **110'** by lowering from overhead a plurality of various compacted and/or non-compacted recyclable materials through either of the open tops **136'**, **136"**.

[0027] Additional features of the platform **116** and multi-wheeled undercarriage **112** includes a support jacking device **118'** positioned underneath the front end **118**. The jacking device **118'** is temporarily extendable during stationary loading and unloading of the platform **116** in order to maintain a level

platform. The front support jacking device **118'** is retractable under the front end **118** of the platform **116** during towed transport of the wheeled undercarriage **112** in a conventional manner. A trailer hitch **114** is disposed under the platform front end **118** (see Fig. 6), or a similar coupling device is utilized as known to those skilled in the art regarding towed semi-trailers. The trailer hitch **114** is releasably connectable to a docking unit on a tractor-truck vehicle (not shown) for towing the semi-trailer **100** over public roads for loading and unloading at appropriate facilities of crushed vehicles and/or salvageable recyclable materials.

5 [0028] An additional embodiment for the second sidewall **134** and upper frame **136** includes a retractable canvas tarp or similar flexible synthetic cover that is extendable from an upper position above front support segment **142** to cover the length and width of the open tops **136', 136"** to minimize loss of debris during transport of crushed vehicles and/or other scrap materials from within the semi-trailer **100**. Those skilled in the art will recognize that a semi-trailer **100** having one sidewall **134** mounted for clamshell movement can be utilized for transport of a plurality of salvageable materials and/or for transport of a plurality of large objects having recycle value and which require side-loading by a forklift **190** with the sidewall **134** in an elevated position **140**. A unique feature of the semi-trailer **100** having one sidewall **134** mounted for clamshell movement includes the option of loading materials from an overhead position into either of the open tops **136', 136"** when the sidewall **134** is in a closed position **140'**. Also, no chains or straps are required to retain the materials in the semi-trailer **100**. Rapid loading and unloading of materials is feasible whether the sidewall **134** is raised **140** or in the closed position **140'**, and no manipulation of chains or straps

is required as is typical of prior transport trucks. One skilled in the art will recognize that either sidewall is mountable for clamshell movement above the platform **116**. An additional embodiment includes a second side having a lower sidewall portion separate from an upwardly pivoting second sidewall. The second side lower sidewall can be hydraulically pivotable along a base edge aligned with the platform second side **116"**, for movement of the lower sidewall to an inclined position (not shown) and forming a ramp extendable to a loading dock or the ground from the second side **116"** to facilitate side access loading and unloading without departing from the spirit and scope of the present invention.

**[0029]** While the present invention has been illustrated by description of several embodiments and while the illustrative embodiments have been described in considerable detail, it is not the intention of the applicant to restrict or in any way limit the scope of the appended claims to such detail. Additional advantages and modifications will readily appear to those skilled in the art. The invention in its broader aspects is therefore not limited to the specific details, representative apparatus and methods, and illustrative examples shown and described.

Accordingly, departures may be made from such details without departing from the spirit or scope of applicant's general inventive concept.